WHAT IS CLAIMED IS:

1. A counting system for counting the number of passing objects in a path, comprising:

a light emitter for irradiating a line which extends along a width direction of said path with a slit ray;

an image capturing part for photographing said line to obtain an image;

a line data generator for generating one-dimensional line data indicative of an irradiation state of said slit ray on said line from the image obtained by said image capturing part; and

a counter for counting said number of said passing objects on the basis of said line data.

2. A counting system for counting the number of passing objects in a path, comprising:

a light emitter for irradiating a plurality of lines which extend along a width direction of said path and provided at intervals, respectively, with a plurality of slit rays;

an image capturing part for photographing said plurality of lines to obtain images;

a line data generator for generating a plurality of pieces of one-dimensional line data each indicative of an irradiation state of each of said slit rays on said plurality of lines, respectively, from images obtained by said image capturing part; and

a counter for determining travel directions of said passing objects on the basis of said plurality of pieces of line data, and counting said number of said passing objects in each of the travel directions of said passing objects.

3. The counting system according to claim 1, wherein

said line data generator selects a statistical representative value from values of pixels of each pixel column arranged in a second direction orthogonal to a first direction corresponding to a direction of said line in said image, and sets said statistical representative value as a value of a pixel in said line data in the same position as each pixel column.

4. The counting system according to claim 2, wherein

said line data generator selects a statistical representative value from values of pixels of each pixel column arranged in a second direction orthogonal to a first direction corresponding to a direction of said line in said image, and sets said statistical representative value as a value of a pixel in said line data in the same position as each pixel column.

5. The counting system according to claim 3, wherein

said statistical representative value includes the maximum value in the values of pixels in each pixel column.

6. The counting system according to claim 3, wherein

said statistical representative value includes the maximum value in values each obtained by adding values of two neighboring pixels in each pixel column.

7. The counting system according to claim 1, further comprising:

an interruption data generator for comparing said line data with reference data indicative of a state of said line when said slit ray is not interrupted and generating

one-dimensional interruption data indicative of a position in which said slit ray is interrupted on said line, wherein

said counter counts said number of said passing objects on the basis of said interruption data.

8. The counting system according to claim 2, further comprising:

an interruption data generator for comparing said line data with reference data indicative of a state of said line when said slit ray is not interrupted and generating one-dimensional interruption data indicative of a position in which said slit ray is interrupted on said line, wherein

said counter counts said number of said passing objects on the basis of said interruption data.

9. The counting system according to claim 7, wherein

in said interruption data, a value of a pixel which serves as data in each of positions on said line is expressed by two values of a first value indicating that said slit ray is interrupted and a second value indicating that said slit ray is not interrupted.

10. The counting system according to claim 9, wherein

said passing object is a person, and

said counting system further comprises an extractor for extracting a group of pixels which are continuous with respect to position, each of which has said first value, and of which number exceeds a first reference value in said interruption data, as information indicative of said person on said line.

11. The counting system according to claim 9, further comprising:

a changing part for changing a value of a group of pixels which are continuous with respect to position, each of which has said second value, and of which number is less than a second reference value in said interruption data, to said first value.

12. The counting system according to claim 7, wherein

said line is photographed in predetermined time cycles and said line data is generated in said predetermined time cycles from images obtained by the photographing, and

said counting system further comprises an updating part for updating said reference data on the basis of a predetermined number of pieces of said line data generated most recently.

13. The counting system according to claim 7, wherein

said line is photographed in predetermined time cycles and said interruption data is generated in said predetermined time cycles from images obtained by the photographing, and

said counting system further comprises:

an image generator for generating time-series images each by connecting a predetermined number of pieces of said interruption data generated most recently in accordance with generation time; and

a display for displaying said time-series images.

14. The counting system according to claim 1, wherein

said passing object is a person, and

said slit ray is an invisible ray.

15. The counting system according to claim 2, wherein

said passing object is a person, and

said slit ray is an invisible ray.

16. A method of counting the number of passing objects in a path, comprising the steps of:

(a) photographing a line which extends along a width direction of said path while irradiating said line with a slit ray;

(b) generating one-dimensional line data indicative of an irradiation state of said slit ray on said line from images obtained in the step (a); and

(c) counting said number of said passing objects on the basis of said line data.

17. A method of counting the number of passing objects in a path, comprising the steps of:

(a) photographing a plurality of lines which extend along the width direction of said path and provided at intervals, respectively, while irradiating said plurality of lines with a plurality of slit rays;

(b) generating a plurality of pieces of one-dimensional line data each indicative of an irradiation state of each of said slit rays on said plurality of lines, respectively, from an image obtained in the step (a); and

(c) determining travel directions of said passing objects on the basis of said plurality of pieces of line data, and counting said number of said passing objects in each of the travel directions of said passing objects.